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10/552,563	10/11/2005	Vidar Snekkenes	128.1202USN	2574

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EXAMINER	
CALANDRA, ANTHONY J	
ART UNIT	PAPER NUMBER
1791	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/552,563	SNEKKENES ET AL.	
	Examiner	Art Unit	
	ANTHONY J. CALANDRA	1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16th February 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Detailed Office Action

1. The amendment dated 2/16/2008 has been entered and fully considered.

2. Claims 1-8 are currently pending.

Claim Objections

3. In light of the amendment the objection to claim 2 is withdrawn.

Claim Rejections - 35 USC § 102/103

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 2, 4-6 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over U.S. Patent 4,436,586 ELMORE, hereinafter ELMORE.

6. As for claim 1, ELMORE discloses a method for the treatment of chips [abstract], comprising, heating the chips with steam in a steam treatment [Figure 1 steaming vessel (13) and chute (14)] , adding an acidic fluid to the chips during the steam treatment in an amount that gives the chips at least a five-fold increase in an ionic concentration of hydrogen ions at the end of steam treatment compared to steam treatment without adding the acidic fluid, reducing the pH of the chips by at least 0.5 units [H2SO4 is added to the chip and the final pH is 1.5; see e.g. Table 1 cook #3; the pH of water in the chips which is displaced by acid is between 6-7 thus the acid lowered the pH by at least 4, further pH is a logarithmic scale which measures hydrogen ion concentration, a lowering of pH by 4 is greater than a five fold increase in hydrogen ions].

Forming the chips to a slurry with an alkali impregnation fluid, conveying the slurry to a digester and cooking the chips in the digester[white liquor is added to the chips (47), where white liquor is an alkali, prior to the chips entering the digester; chips are conveyed via line (43) Figure 1].

In the alternative, should it not be clear that acid addition and steam treatment overlap during the process of ELMORE the amended claim is alternatively rejected as obvious over ELMORE. The selection of order of mixing steam first and acid second or adding steam and acid simultaneously is *prima facie* obvious absent of evidence of unexpected results [see e.g. MPEP 2144.04 (IV) (C)]. Applicant further states that ELMORE could not work as the instant application and therefore is unobvious because the removed acidic slurry phase is extracted with the alkaline phase forming an acidic/alkaline hydrolystate that needs a special recovery process. Applicant points to figure 2 to prove this point. Examiner notes that the vessel the impregnation vessel shows that the middle screen is divided into two zones (27) and (38). These screens would allow acid extracted hydrolystate and alkaline hydrolystate to be separated if desired without significant modification. Secondly, ELMORE clearly states that the caustic pre-extraction is not necessary and therefore liquor extracted by line 40 would only contain acid and not be mixed with caustic [see e.g. column 1 lines 60-68, and table 1 experiment 3].

7. As for claim 2, ELMORE teaches that the acid hydrolysis takes in the top of an impregnation vessel [see e.g. Figure 1 (23)]. ELMORE further teaches that the hydrolysis takes place at a pressure of 200 psig [see e.g. column 6 line 50]. ELMORE further discloses that the pH of the treatment is less than 4 [Table 1, experiment 3].

8. As for claim 4, ELMORE discloses that the liquor to wood ratio of 2:1 which does not exceed the instant claim ratio of 2:1 [see e.g. column 6 lines 42-45].

9. As for claim 5, white liquor [which is a sulfide rich liquor] is added to the to the chip circulation line (46) before the chips are transported to the kraft digester [see e.g. figure 1].

10. As for claims 6, ELMORE teaches that white liquor is used in the Kraft cook [Figure 1], ELMORE also that it is a traditional kraft cook [column 6 lines 9-15]. Normal white liquor has a sulfidity of approximately 1 mol/liter, as evidenced by applicant's specification [see e.g. pg 5 lines 25-30].

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

12. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

13. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 4,436,586 ELMORE, hereinafter ELMORE, as applied to claims 1, 2, 4-6 above, in view of ***Chemical Pulping*** by GULLICHSEN, hereinafter GULLICHSEN.

As for claim 3, ELMORE teaches an acid pretreatment process in which acid is added (24) to the feed system impregnation vessel and digester. Some of the acid gets added by way of

circulation through (16) to the steaming vessel 13 and chip chute 14. A steaming vessel can be run at pressures up to 15 psig or 1 bar which is higher than the claimed range of 0 to 0.5 bar. GULLICHSEN discloses that steaming vessels can be replaced by a single atmospheric steaming stage [see e.g. pg. A 563 section 5.3]. Since the acid of ELMORE is added first to the feed system the acid treatment would first occur at atmospheric pressure if the low pressure feeder and steaming vessel were removed. At the time of the invention it would have been obvious to a person of ordinary skill in the art to replace the steaming vessel of ELMORE with the Lo-level feed system of GULLICHSEN. A person of ordinary skill in the art would have been motivated to replace the steaming vessel with the lo-level feed system since the removal of the steaming vessel leads to improved cooking uniformity, increased yield and increased strength [see e.g. GULLICHSEN, pg A565 paragraph 6].

14. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 4,436,586 ELMORE, hereinafter ELMORE, as applied to claims 1, 2, 4-6 above, in view of U.S. Patent 6,203,662 SNEKKENES et al., hereinafter SNEKKENES et al..

15. As for claim 7, ELMORE teaches that white liquor is used in the Kraft cook [Figure 1], ELMORE also that it is a traditional kraft cook [column 6 lines 9-15]. The NaOH concentration of the white liquor is greater that 0.75 mol/liter. SNEKKENES et al. teaches that a substantial amount of withdrawn liquor should be added to the beginning of the impregnation zone [column 1 lines 54-57]. This liquor is spent and the alkali content of the impregnation is 30 g/l, which is equivalent to 0.625 moles/liter [20 grams * 1 mole/32 grams]. The sulphidity of the spent liquor would obviously be at least 0.15 moles/liter because the references provide substantially the disclosed process steps. At the time of the invention it would have been obvious to a person of

ordinary skill in the art to substitute the improved kraft cooking process of SNEKKENES et al. for the traditional kraft process of ELMORE, which is subsequent to the acidic pretreatment of ELMORE. A person of ordinary skill in the art would be motivated to make this substitution because this cooking process optimizes chemical consumption, gives good heat economy and achieves good pulp properties over traditional Kraft cooking [see e.g. SNEKKENES et al. abstract].

16. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 4,436,586 ELMORE, hereinafter ELMORE.

As for claim 8, ELMORE teaches the acidic pre-treatment temperatures of 90 and 105 degrees C which are 2 specific points which lie in the range of 80-120 degrees C [see e.g. Table 1]. ELMORE also teaches the residence times of 45 and 60 minutes [see e.g. Table 1]. ELMORE further recognizes that the residence time is highly adjustable depending on the makeup of the wood chips, capacity of the subsequent digester, etcetera [see e.g. column 5 lines 32-36]. At the time of invention it would have been obvious to a person of ordinary skill in the art to optimize the residence time of the acidic pretreatment to 1-20 minutes to effect properties such as hemicellulose yield in the digester [see MPEP 2144.05 II].

Response to Arguments

17. Applicant's arguments filed 2/16/2008 have been fully considered but they are not persuasive. Applicant amended the claims to clearly state that the acid must be added *during* the steam treatment. It is the examiners position that the art of ELMORE still teaches this claimed feature. ELMORE discloses that the acid needed is added to level tank (18) through line (24). The acid then circulates with the chips in feed line (21) and liquor return line (19). Acidic liquor

from the high pressure feeder 15 leaves through line (16) and then can enter chip chute (14) where acid is contacted with the chips. The steam that is added in steaming vessel (13) is also present in chip chute (14) therefore the steaming and acid treatment occur simultaneously and meet the claimed limitation. Examiner points out that a steaming vessel is directly in contact with a chip chute thus as chips fall from the steaming vessel into the chute, steam necessarily escapes the vessel into the chip chute. In addition to method of cooking in Figure II ELMORE shows a single vessel digester with acid treatment [see e.g. Figure 3]. In this cooking method acid is added to circulation line (30) which contains steam heater (29) which circulates the acidic liquor in the chips the top of the vessel. Examiner has taken a reasonable interpretation of 'steam treatment' to include both direct and indirect steam treatment. In the case of figure three, the chips are being heated with acidic liquor that is being heated indirectly by steam [see e.g. figure 3 and column 6 lines 1-8] and therefore ELMORE meets the recited claim limitation.

In the alternative, should it not be clear that acid addition and steam treatment overlap during the process of ELMORE the amended claim is alternatively rejected as obvious over ELMORE. The selection of order of mixing steam first and acid second or adding steam and acid simultaneously is *prima facie* obvious absent of evidence of unexpected results [see e.g. MPEP 2144.04 (IV) (C)]. Applicant further states that ELMORE could not work as the instant application and therefore is unobvious because the removed acidic slurry phase is extracted with the alkaline phase forming an acidic/alkaline hydrolysate that needs a special recovery process. Applicant points to figure 2 to prove this point. Examiner notes that the vessel the impregnation vessel shows that the middle screen is divided into two zones (27) and (38). These screens would allow acid extracted hydrolysate and alkaline hydrolysate to be separated if desired

without significant modification. Secondly, ELMORE clearly states that the caustic pre-extraction is not necessary and therefore liquor extracted by line 40 would only contain acid and not be mixed with caustic [see e.g. column 1 lines 60-68, and table 1 experiment 3].

Conclusion

18. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANTHONY J. CALANDRA whose telephone number is (571) 270-5124. The examiner can normally be reached on Monday through Friday, 7:30 AM-5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on (571) 272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Steven P. Griffin/
Supervisory Patent Examiner, Art Unit 1791

AJC